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Compact Precomputed Voxelized Shadows Construction on GPU

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Аннотация. We consider the problem of producing high-quality shadows in real-time for 3D computer graphics software. In [1, 4] authors have proposed new data structure for object geometry representation by binary voxel grid. This binary data was packed to directed acyclic graph — traditional sparse voxel octree with merged identical subtrees. This approach has been extended to shadowing by voxelizing shadow volumes instead of object geometry [2, 3]. Obtained structure enables high-quality filtered shadows to be reconstructed for any point in the scene in real-time.

In [1–4] authors have used CPU-based bottom-up algorithm that reduces sparse voxel octree to minimal directed acyclic graph. In the present paper we construct new parallel algorithm for such reduction that runs entirely on GPU.

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